

NOTES ON HELOMYZIDÆ AND DESCRIPTIONS  
OF NEW SPECIES*(Diptera)*

BY C. B. D. GARRETT

The local conditions at Cranbrook, British Columbia, seem admirably adapted to the life of the dipterous family Helomyzidæ, which is borne out by the number of species found here and the great abundance of some. Thus in studying the family I have examined several thousand, and numbers usually tend to show what amount of variation should be expected in each species. The classification of earlier works has been based chiefly on the humeral and dorso-central bristles; but specimens before me show the unreliability of these features, which have also been at least in part the cause of new genera being erected that have fallen as synonyms, and in some cases the dorso-centrals vary as much as 50 per cent and in others from 5 to 15 per cent. Another weak feature of this classification is that the dorso-centrals throw into a single genus two or more insects of quite distinct structure and in some cases three distinct forms of the male genitalia. Thus starting for my own satisfaction a new classification in my cabinets I soon realized its apparent reliability and distinct benefit, so after careful consideration and thought I would offer it for the adoption of others. In collections containing a large number of the North American forms the proposed classification will clearly show how the special types of male hypopygium are thrown in convenient groups, at the same time into distinct genera on other features, a benefit that is not easily overlooked.

The main feature of the new scheme is based on the foremost (next the antennæ) fronto-orbital bristle, and in the hundreds that I have examined in no case did I find it to vary, excepting in one species in which no two specimens seem exactly alike. This species is easily separated by other characters, and cannot be the cause of any trouble. In the genus *Anorostoma* Loew, three American species fall into one genus,

but the fourth splits to another where it can be easily separated on other features.

It may appear that too many new genera are erected, six being proposed. Of these, two species of *Leria* never had any real right in that genus, the structure being so different that both should have had new genera long ago. Again, two species herein described could not fit in any known genus, and would require new genera in any case. The last two are there merely by the features of the classification.

In the near future I hope to revise the North American forms and would ask the loan of all specimens, however few, for the purpose of examination. Any criticism of this paper will be welcome.

#### PROPOSED NEW CLASSIFICATION

1. Foremost fronto-orbital bristle, longer, equal (or nearly so) to the hind fronto-orbital bristle..... 2
- Foremost fronto-orbital bristle from one-half to three-quarters the length of the hind one..... 4
- Foremost fronto-orbital bristle less than half the length of the hind one; small, hairlike or absent..... 7
2. With prosternal bristles (male hypopygial claspers usually two long curved horns).....*Leria* Loew
- No prosternal bristles..... 3
3. Lower half of the oral margin with long silky hairs, longer than the vibrissæ; mid tibia with two preapical bristles; costa with a conspicuous bump over the auxiliary vein..*Barbastoma* Garrett
- Lower half of oral margin with the usual short hairs; mid tibia with only one preapical bristle<sup>1</sup>.....*Postleria* Garrett
4. With prosternal bristles (male hypopygial claspers two short irregularly oval horns).....*Amabaleria* Garrett
- Without prosternal bristles..... 5
5. Mesopleura bare ..... 6
- Mesopleura with a bristle or two.....*Anorostoma* Loew
6. Mid tibia with very short preapical bristle; a single very long apical spur, much longer than the preapical bristle,  
*Thephrochlamys* Loew
- Mid tibia with several longish apical spurs.....*Morpholeria* Garrett

<sup>1</sup>*Anorastoma maculata* Darlington may seem to fall here, in which case it is readily separated by having a mesopleural bristle, wings spotted, and very short vibrissæ and arista.

7. Prosternal bristles present.....No species in America  
 No prosternal bristles ..... 8
8. Foremost fronto-orbital bristle absent; hind one very small;  
 arista very long (humeral, propleural, sternopleural and hind  
 supra-alar absent).....*Porsenus* Darlington  
 Not such ..... 9
9. Pteropleura hairy, often with a bristle; scutellum not hairy;  
 arista only microscopically pubescent; foremost fronto-orbital  
 bristle usually present, hairlike or small.....*Pseudoleria* Garrett  
 Not such .....10
10. Mid tibia with two pre-apical bristles.....11  
 Mid tibia with one pre-apical bristle.....12
11. Mid tibia with two or three spines near the middle,  
*Oecothea* Halliday  
 Hind femora with two or three irregular rows of spines on the  
 outside; eyes small; arista very long.....*Eccoptomera* Loew
12. Mid tibia with only one long apical spur and two short ones;  
 tarsi not conspicuously spurred (tarsus 4 elongate; tarsi long,  
 as deep as broad).....*Allophyla* Loew  
 Mid tibia with several long apical spurs.....13
13. Only one fronto-orbital bristle (arista usually plumose; wings  
 usually infuscated; scutellum except in one or two species  
 with one or many hairs).....*Helomyza* Fallen  
 Usually two fronto-orbital bristles; male with a comb or cluster  
 of spines on the inside of the hind femora; scutellum not  
 with hairs; wings hyaline; arista microscopically pubescent,  
*Acantholeria* Garrett

Having no knowledge of the fronto-orbital bristles in the genus *Crymobia* Loew, I am unable to place it. There is but one American species, *C. hiemalis* Loew. *Anorostomoides petersoni* Malloch I believe to be a synonym. Some of the generic features are prosternal bristles absent, mid tibia with two preapical bristles.

***Leria aldrichi*, new species.**

Length 3 to 4 mm. One long pair of prosternal bristles. Frontal bristles equal; four dorso-centrals.

Head. Occiput grayish brown, antennæ to vertex red yellow, face and cheeks yellowish, antennæ 1 to 3 dark red brown, arista medium long, microscopically pubescent. Vibrissæ two, and long hairs in a single row to lower corner.

Thorax. Dorsum, brownish dark. Shades of a median stripe and through the roots of the dorso-centrals darker, sparingly hairy, short. Scutellum brownish.

Pleura. Gray black, propleura one bristle, mesopleura bare, except four hairs below the disk. Pteropleura bare. Sternopleura one bristle, a few hairs along the top edge, center bare and many bristles between the coxæ.

Abdomen. Dark drab brown, sparingly hairy with apical bristles on segments 3 to 5. Hypopygium color of abdomen, outer claspers a plain L, the stem pointed toward the head.

Legs. Black or dark brown; wings hyaline, veins dark. Humeral bristle present.

Female similar to the male.

Described from one male, 4th March. Holotype, allotype and paratypes, three females, taken on 8th, 24th, and 30th March.

All from Cranbrook, British Columbia.

### ***Leria tristissima*, new species.**

Fronto-orbital bristles equal. Three pairs of short prosternals; four dorso-centrals; one humeral.

Monotype male, length about 3.5 mm.

Head (blackish) brown, vertex to antennæ orange yellow, face and cheeks dark yellow; antennæ one and two red-yellow; three missing; vibrissæ two below with an outer and an inner row of hairs to the lower corner distinctly separated.

Thorax somewhat polished; dark brown, sparingly hairy, all bristles very long. Scutellum brown, dark.

Pleura dark brown; propleura one bristle; mesopleura one long strong bristle on the upper hind edge near the middle; pteropleura bare; sternopleura one large one smaller bristle, and also two incomplete rows of hairs along the top edge, central bare and two or three rows of bristles between the coxæ.

Abdomen black brown, sparingly hairy, but with apical bristles on each segment. Hypopygium red brown, not extended, but will be mounted later on a slide.

Legs: femora dark red brown, tibia and tarsi dark red yellow; wings hyaline not clear; veins dark.

Described from one male from St. Anthony, Newfoundland, 4th May.

It is closely allied to *tristis* Walker, apart from which I consider the mesopleural bristle a good specific character.

**Barbastoma**, new genus (from Greek *barba*, a beard; *stoma*, a mouth).

Generic characters: Dorso centrals (I think) four small; one humeral, one presutural, two notopleura, only two supraalar, three pair scutellar, no prosternal; mid tibia with two pairs of preapical bristles; wings, costa with a conspicuous bump over the tip of the auxiliary vein, spines few short; small cross vein below tip of auxiliary; vein one very long, tip ending above midway between the two cross-veins; large cross-vein joining vein five at an acute angle; foremost fronto-orbital a little shorter than the hind one (about equal); lower half of oral margin with long silky hairs, longer than the vibrissæ.

Genotype, the following species.

**Barbastoma barbatus**, new species.

Male. Fronto-orbitals nearly equal, the foremost a little shorter, no prosternal bristles.

Length about 4 mm. Head: occiput gray-black, antennæ to front red-yellow, face and cheeks pale yellow, antennæ dark red-yellow, infuscated; arista very short, less than the length of the head, microscopically pubescent. Vibrissa one very short, from it to halfway two rows of longish black hairs, from there to the lower corner very long golden hairs twice as long as the vibrissæ.

Thorax nearly all darkened by moisture. What is shown is a pale drab brown. The pin has destroyed the sight of the dorso-centrals, one each side of the suture are short; dorsum with sparing hairs which are long, over half of the length of the dorso-centrals. Scutellum with three pairs of lateral bristles, the third about midway between the usual two hairs.

Pleura blackish, propleura one bristle, mesopleura bare, no hairs below the disk, pteropleura bare, sternopleura one long and one shorter about half the size, rest bare except between the coxæ where there are two or three rows of bristles.

Abdomen black brown, hypopygium yellow brown, both with sparing black hairs.

Legs pale red-yellow, fore femora much swollen, tibia of fore and hind with preapical bristles weak, mid tibia with two strong divergent; legs with black hairs. Wings hyaline, costa with a conspicuous bump its height over the tip of the auxiliary vein; spines few, short. Small cross-vein below the tip of the auxiliary vein, vein one very long, ending above midway between the two cross-veins. Large cross-vein joins vein five at acute angle.

Monotype male, taken 14th October, 1919, 3 miles up Sheep Creek from the mouth of Coyote Creek, or at the bottom of the Ram Creek Pass trail, when out hunting. There were heavy frosts, and about this time it went to 15 degrees below zero. Sheep Creek is nearest to Wasa, British Columbia, some 24 miles from Cranbrook, British Columbia.

#### **Postleria**, new genus.

Fronto-orbital bristles equal or nearly so. No prosternal bristles. Arista usually short. Otherwise as *Leria* Loew.

Genotype, the following species.

#### **Postleria fuscolinea**, new species.

Fronto-orbitals nearly equal, no prosternals, dorsocentral bristles very variable, the first next the scutellum seem always present, and medium sized, the next three being behind the suture present or absent, when present, the first one larger. The presutural one usually present, though small.

Length about 5 mm. Head light brown, a broad dark brown stripe from the antennæ straight through to the occiput, only thin pale margins next to eyes. Cheeks red-yellow, often silvery. Antennæ red-yellow infuscated, arista short black, microscopically pubescent. A basal swelling slightly larger than is usual.

Thorax brown, with four dark brown stripes, two near the center and two lateral of large disconnected oval spots.

Humeral bristle strong. One to five dorso-centrals; dorsum with many short thick black hairs.

Pleura dark brown, lighter in places, propleura always with two bristles, sometimes three. Mesopleura bare except two hairs below the disk. Pteropleura bare. Sternopleura, one strong bristle and six short thick hairs, along the top edge, rest bare except between the coxæ, where there are four or five rows of bristles.

Abdomen dark brown, usually with a thin pale apical edging, with few or many short thick black hairs. Hypopygium yellow brown.

Legs and coxæ, yellow brown, the preapical bristle of the fore tibia short, the hind one longest. Fore femora swollen.

Wings hyaline, veins brownish.

The female is the same as the male.

Described from twenty-four specimens, eight male and sixteen female, one taken 26th May, all others in June at Cranbrook, British Columbia, and one from Michel, British Columbia, 2d August.

The eggs are elongate oval, tips sharp, with longitudinal ridges.

### **Amoebaleria**, new genus.

With prosternal bristles, usually only one, sometimes two pairs. Foremost fronto-orbital bristle from over half to about three-quarters the length of the hind one. Otherwise as *Leria* Loew.

Specimens of this genus are usually large. Five species have a hairy mesopleura, four without. The male hypopygium is large, but the two main claspers are small, and irregularly oval instead of the long hooks of *Leria*. The name is from the Greek *amoeba*, changing, referring to the variability of the dorso-centrals.

### **Amoebaleria scutellata**, new species.

Length 8 mm.; foremost fronto-orbital about three-quarters of the hind one, one pair of prosternals, four dorsocentrals,

one humeral. Occiput gray black, antennæ to front orange-yellow, face and cheeks red-yellow. One strong vibrissa, below a single row of longish black hairs to lower corner, and three of another row next to vibrissæ. Antennæ red-yellow, arista medium long, black, and microscopically pubescent.

Thorax gray black, one thin median red brown stripe, the dorsocentrals rising from small oval spots of the same color. Dorsum with long fine black hair, scutellum gray-black, with brownish shading and lies almost touching the postnotum.

Pleura upper parts brownish, lower gray-black; propleura one bristle, mesopleura bare except about twelve hairs below the disk. Pteropleura bare, sternopleura one strong bristle, the rest entirely covered with long fine black hairs, and bristles between the coxæ.

Abdomen red-yellow, blackish in places, all covered with long fine black hairs, segments two to five with distinct apical bristles.

Legs and coxæ red-yellow, fore femora and some tarsi infuscated, all covered with long fine black hair, shorter and less on the tarsi.

Wings hyaline, veins dark.

Monotype male, 3d May, Cranbrook, British Columbia, 3500 feet.

This species is allied to *fraterna* and *gigas*.

### **Amoebaleria gigas, new species.**

Length 8 to 9 mm., often 4 to 10.

Head, antennæ, thorax, pleura, abdomen, legs pale red-brown; front to antennæ orange yellow. The abdomen occasionally, especially in the female, with blackish gray covering. Arista medium long, black and microscopically pubescent. Vibrissa one strong below, where are three to five rows of long fine hairs to the lower corner; dorsum with three distinct stripes of red brown, the median one sometimes short, the other two through the base of the dorso-centrals, which may be strong or weak, or one to four. Humeral bristle present or absent. Scutellum with two pairs, often an extra bristle.



Pleura, propleura one bristle, rarely two; mesopleura thickly covered with long black hairs except a bare patch from the disk widening to the sternopleura; a bunch of twenty hairs below the disk. Pteropleura centrally near the anterior edge with a square patch of long fine hairs. Sternopleura with one or two strong bristles at top corner, the rest almost entirely covered with long fine hairs, which are longer between the coxæ, but are not bristles.

Abdomen entirely covered with long fine hair; the usual apical bristles are not seen. Male hypopygium, claspers distinct, except perhaps for *Leria tinctoria* which I have not examined.

Legs thickly and entirely covered with long thin hair, mid tibia spurs curved, wings subhyaline, basal cells yellow, large cross vein slightly infuscated, sometimes blackish.

The female is the same as the male, but the humeral and dorso-central bristles seem always present and strong.

Described from 137 specimens from Cranbrook and Michel, British Columbia, taken in March to August, being 45 male and 92 female. Named *gigas* for its large size.

**Morpholeria**, new genus (from *morpho*, meaning "wanting form," from *Leria*).

Foremost fronto-orbital bristle from a half to three-quarters the length of the hind one; no prosternal bristle. Otherwise as *Leria* Loew.

**Morpholeria melaneura**, new species.

Foremost fronto-orbital nearly three-quarters of the hind one; no prosternal bristle; four dorso-centrals, one humeral.

Length about 2.5 to 3 mm. Head: Occiput, gray brown, antennæ to front, orange yellow, face and cheeks red-yellow; antenna dark red brown, arista very short; about two-thirds the diameter of the eye, or as long as the vibrassa, which is longish, and a single row of hairs below to the lower corner.

Thorax drab brown, shades of a dark median stripe, and along the roots of the dorso-centrals; dorsum very sparingly hairy, but regularly.

Pleura black, grayish. Propleura one bristle; mesopleura bare except five or six hairs below the disk; pteropleura bare; sternopleura one bristle, in front of which are a few scattered hairs to the middle of the top edge, then down the center to between the coxæ, where there are many bristles.

Abdomen dark brown or approaching black, with very few hairs and long or median apical bristles on most segments. Hypopygium polished or shiny and type of *Amoebaleria* claspers.

Legs dark brown, femora blacker; wings hyaline; spines few, usually very short.

Described from seven specimens, two males, five females, taken in April, May and October at Cranbrook, British Columbia.

Type male, allotype female.

**Pseudoleria**, new genus (from the Greek *pseudos*, "false" *Leria*).

Foremost fronto-orbital usually present, small and hair-like, about one-fifth the length of the hind one, but often absent. No prosternal bristles; one humeral; four dorso-central. Head deeper than long, eyes small, arista rather long. Mesopleura bare, except one or two hairs below the disk, pteropleura with four to twelve longish hairs and sometimes a bristle.

Genotype, *P. pectinata* Loew.

**Pseudoleria pectinerata**, new species.

Type female. Foremost fronto-orbital missing or hair-like; no prosternal bristle, one humeral, four dorso-centrals.

Length about 5 mm. Head brownish, antennæ to ocelli red-yellow; face and cheeks pale brown. One long strong vibrissa, below which are two rows of short even sized hairs to the lower corner. Antennæ dark red-brown, arista rather long, microscopically pubescent.

Thorax pale brown with or without a thin median red-brown stripe almost full length; dorso-centrals rising from round spots of the same color. Dorsum with regular but short thick hairs.

Pleura color of dorsum, but shading darker to sternopleura, where it is blackish or grayish. Propleura one bristle; mesopleura bare, except two strong long hairs below disk. Pteropleura with four to seven longish hairs. Sternopleura one strong bristle, and all covered with fine medium long hair; a row of bristles between the coxæ.

Abdomen gray black, tip slightly edged with yellowish; all segments with regular, short, thick black hair, but segment three on latero-ventral part of the dorsal plate covered with very many close longish black hairs, like a brush. Segments three to six with apical row of bristles.

Legs and coxæ red-yellow, tips of tarsi slightly darker, fore femora infuscated gray-black.

Wings hyaline, veins yellowish, small cross vein not infuscated, which is usually so in *pectinata*.

Described from three females, taken in June at Cranbrook, British Columbia.

Though I have taken many local males they all seem to be the true *pectinata*, which occurs here also, as I have several females too. *Pectinerata* is very close to it, but is larger than local *pectinata*.

### **Oecothea canadensis**, new species.

Only one fronto-orbital bristle, no prosternal.

Length 4 mm. Head brown; front to antennæ yellowish, as are the face and cheeks. One strong vibrissa, below which is a single row of six or seven hairs, the first four long and strong. Antennæ dark red-brown, arista long black, the basal swelling brown, microscopically pubescent.

Thorax brown, darkish, the edges, humeral and scutellum yellow-brown; dorsum with many short thick black hairs, the notopleura bare and near it. Scutellum much raised from the postnotum in lateral view.

Pleura dark brown, the edges of the divisions lighter; sternopleura black brown, with one strong bristle and another weaker; posterior part with scattered short hairs, becoming bristles below the coxæ. Postnotum black-brown.

Abdomen all gray-black; hypopygium yellow-brown, all with short thick hairs; segments two to five with apical bristles.

Legs and coxæ yellow-brown, tarsi slightly darker; mid femora with many strong bristles outside. Mid tibia about the center with one spine on the inside and two outside; two preapical bristles.

Wings hyaline, veins dark brown, large crossvein leaving vein four at more than a right angle, and joining five at an acute angle.

Cell first R, along the center almost equal in depth to that of the cell below R 3.

Described from one male, holotype, 29th March, Cranbrook, British Columbia.

The female taken here but not *in copula* is similar, except that the pleura are a lighter brown, the second sternopleural bristle is only a long hair, abdomen two to five dark brown, edge paler. The large crossvein as in the male, but from the center to vein four it is curved, thus leaving four at nearly a right angle.

Two females, allotype and paratype, 28th April, Cranbrook, British Columbia; 28th July, Michel, British Columbia.

**Acantholeria**, new genus (from the Greek *akantha*, spined, and *Leria*).

Foremost fronto-orbital missing, hair-like, or about one-third of the hind one, very rarely in the female nearly a half. No prosternals; four large strong dorso-centrals, etc. Males with a bunch or a comb of spines on the inside of the hind femora, and on the lower side of the mid femora near the apex a row of short spiny bristles on the outer and inner edge. Females with no cerci, the hypopygium on the outside all round set with short spiny bristles, usually the tips curved outward. (Females that presumably have laid eggs, often have lost most of these spines, from which we might gather that they are used for the purpose of pushing the ovipositor into something to leave the egg behind. The local specimens all seem to be taken above or near large dampish cellars.)

Genotype, *A. cineraria* Loew.

**Acantholeria oediemus**, new species.

Male and female. Foremost fronto-orbital from nothing to about a third of the hind one, in the female averaging larger, very rarely nearly a half. No prosternal bristle; large humeral and (four) dorso-centrals.

Length, 5 to 7 mm., taken *in copula*.

Head pale brown, antennæ to vertex red-yellow, antennæ red-yellow; arista medium long, black and very short microscopically pubescent. Vibrissæ one long strong, below a single row of hairs to lower edge.

Thorax, dorsum pale olive brown, rarely a thin median red-brown stripe; dorso-centrals rising from spots of the same color; dorsum irregularly sparingly hairy.

Pleura color as dorsum, but occasionally with a grayish peppering; propleura one bristle, mesopleura bare, except two to four hairs below the disk. Pteropleura bare, sternopleura one strong bristle and six or seven hairs near the top edge, three or four in the middle, and many bristles between the coxæ.

Abdomen gray-black, the end segments sometimes with reddish yellow, all sparingly hairy; male hypopygium red-yellow (construction distinct from *cineraria* and *abnormalis*).

Legs red-yellow in male, the hind femora on the under and inner side with a cluster of 7 to 12 thick strong longish spines with hooked tips, all rising close together but spreading out in fan-shape; from the roots of these to the base perfectly bare and smoothly polished. On the under but outer side, a straight row of smaller spines, from the base; opposite the roots of the cluster a sudden drop to hairs, medium long but thin to the apex. Hind tibia on the under side with an even swell to a bump near the middle.

Described from 241 specimens, 107 male, 133 female. All from Cranbrook and Michel, British Columbia, April to August.

**Acantholeria abnormalis**, new species.

Male. Similar to *oediemus* except interior construction of hypopygium and armament of the hind legs, which on the

under and inner side about the middle have two or three short stout spines, the tips straight; from there to the base are irregular hairs, some short, some long, and approaching bristles in size. On the outer edge of under side are only short hairs all along, or a few bristly hairs near the apex. Hind tibia with no even swelling or bump, but an abrupt blunt point sticking up like a tree-stump.

Described from three males, two on 28th July from Michel, British Columbia, about 4,000 feet, and one, 15th August, Gallatin County, Montana, 5,400 feet.

This latter specimen was sent me by Prof. Cooley, and I had marked it *abnormalis* thinking it such. When I took the other two I examined the interior of the hypopygium and found it distinct.

I have returned a Michel male to Prof. Cooley.

The types of all species are in the collection of the author. Paratypes will be deposited as follows: *Postleria fuscolineata*, male and female, to the U. S. National Museum, the Canadian National Collection, and to Dr. J. M. Aldrich; *Amoebaleria gigas* to the same, and also to Dr. Ferris, Leland Stanford Jr. University, Professor Cooley, Bozeman, Mont., and Dr. C. W. Johnson, Boston, Mass.; one female of *Leria aldrichi* to Dr. Aldrich; one female of *Morpholeria melaneura* to the U. S. National Museum and Canadian National Collection; one male of *Acantholeria abnormalis* to Professor Cooley.

## SOME NEW MUSCOID GENERA ANCIENT AND RECENT

BY CHARLES H. T. TOWNSEND

The following new genera are proposed at this time in order that they may be included in a forthcoming treatment of the muscoid genera of the world.

AUSTENINA gen. nov.—Proposed for *Glossina brevipalpis* Newstead (1910), Ann. Trop. Med. Paras, IV, 372. Differs from *Newsteadina* by the comparatively short palpi.

AWATIA gen. nov.—Proposed for *Musca indica* Awati